tion. Pressure on special nerves should be avoided, and the arms should never be raised above the head, but, so far as possible, rest in an easily flexed position on the chest. In using leg-holders the parts exposed to special pressure should be carefully padded with cotton-batting. The head should be supported on a pillow, and, if the patient vomits and the arm is raised, the head should be bent toward the arm, and not away from it. As to paralysis of central origin, we can hardly take any prophylactic measures beyond abstaining as far as possible from operating on very old persons, and abridging the duration of the anæsthesia as much as possible. In this respect it is often preferable, if several operations are needed, to operate in two sittings rather than to keep the patient too long under ether.

In regard to curative treatment electricity occupies the first place; but since it has been found that its application shortly after the operation is very painful, it is advisable to wait about a week before having recourse to it. All my cases have responded nicely to faradization Krumm recommends to use galvanism and place the cathode on the point of lesion, and later to use labile and stabile electrization both above and beneath the seat of the lesion.

Besides electricity, massage and hydrotherapy are undoubtedly of some value. Among drugs strychnine is the most important, and may be given together with iron, quinine, arsenic, extract of red marrow, and a nourishing diet.

A CASE OF DISTORTION OF THE AORTA IN POTT'S DISEASE.

By Thomas Dwight, M.D., LL.D.,
PARKMAN PROFESSOR OF ANATOMY AT THE HARVARD MEDICAL SCHOOL.

That the aorta is liable to distortion in Pott's disease is well known to specialists; but, if I am not mistaken, the fact is not generally familiar. It is partly for this reason that I venture to publish the following observation, and partly because I am not acquainted with any account of an equal distortion. Leon Bouchacourt[1] has recently published an account of a much less striking deformity in a child. I am indebted to him for the statement that the *Thèse de doctorat* of Tournissont, in 1887, inspired by Lannelongue, contains the results of previous works. It appears that the deviations of the aorta in Pott's disease are of five types. In the first, the most common one, the aorta simply follows the bend in the spine, presenting a sudden bend, making a V-shaped angle, open in front. In the second type the vessel is bent forward by an abscess behind it, assuming the form of a C, open behind. In the third type the aorta is thrown to one side, making a C placed laterally. The fourth type, much more uncommon, shows a double lateral curve, so that it represents an S. The fifth type is a combination of more or fewer of the preceding types, being a series of complicated curves. So much for mere deviation. The following passage is from Hoffa:[1] "The aorta and vena cava can have their course changed . . . The folding of the vessels can lead to a considerable reduction of their lumen sufficient to cause an arterial anæmia of the parts below, or a venous congestion of the same. Vascular murmurs are heard when there is a marked narrowing. Lannelongue further points out that a dilatation of the aorta is likely to occur above the bent point and a narrowing below it. He would thus account for sudden and temporary paralyses."

---

[1] Revue d'Orthopédie, Mai, 1895.

The specimen about to be described came from the body of a white man, fifty-one years old, dissected during the past winter at the Harvard Medical School. The body was thin and ill-nourished. The deformity was very great, presenting a very sharp prominence in the middle of the back. On seeing the subject before dissection, I determined to study the relations of the œsophagus, but, unfortunately, forgot all about it under stress of other work, until I was called to see a remarkable arrangement of the aorta. The subject had by that time been thoroughly gutted, so that nothing else was left to study. I was told that a large abscess had been found in the left hypochondrium.

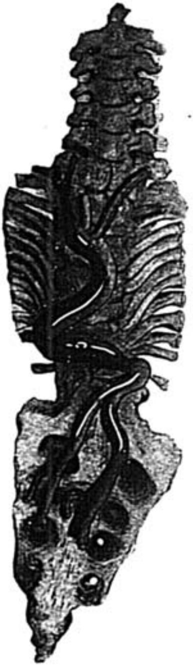
The deformity of the spine was a very great one, situated in the lower half of the thoracic and practically the whole of the lumbar regions. The point of the bend was at the last thoracic spinous process. The angle made by lines drawn through the centres of the vertebral bodies would not have been far from 35°. The length of the spine from the top of the odontoid to the coccyx in a straight line was 40.5 cm., to the promontory 23 cm. The average length to the promontory in the male spine is probably from 60 to 63 cm. I have found this measurement, in fifty of fifty-six male spines, to range from 57 to 66 cm.[2] This shows how great was the shortening. The length of the cervical region was 12.6 cm. (7 mm. below the average), and that of the sacrum and coccyx 17.5 cm., both being measured along the curves. The cervical vertebræ were normal, except for a slight twist to the right, which, perhaps, was not pathological. The same may be said of the bodies of the four upper thoracic vertebræ, and perhaps of the top of the next one. The lower part of the fifth is fused with the sixth, and thence the spine is one piece to the end. There seem to be some remnants of an intervertebral disk below the last lumbar, but they are slight, and the bone is certainly coossified with the sacrum. Owing chiefly to the severity of the lesion, but in part to the necessity of making a ligamentous preparation in order to preserve the aorta, the detail of the condition of the bodies of most of the vertebræ could not be ascertained. The body of the seventh thoracic lay on that of the third or fourth lumbar, joined to it by bone. The intervening ones were indistinguishably fused into one mass, from the sides of which the ribs emerged. The upper lumbar and lower thoracic were deviated to the right, leaving a hollow, probably occupied

---

[1] Lehrbuch der Orthopädische Chirurgie, 1891.

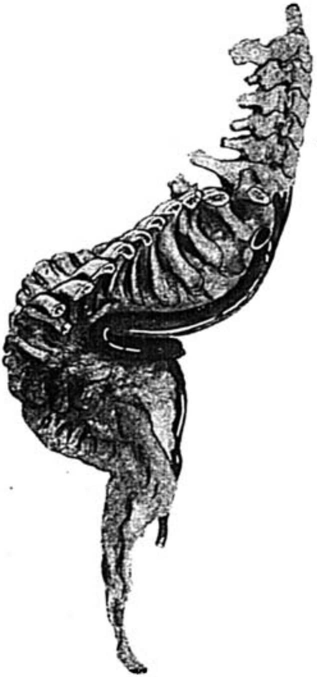
[2] Methods of Estimating the Height from Parts of the Skeleton. Medical Record, September 8, 1894.

Fig. 1.



Front view.

Fig. 2.



View from the right.

The iliacs are hanging loose.

by pus. There were but very slight indications of a spiral twist. Seen from behind, the spinous processes were all distinct and without marked lateral deviation. The ribs, excepting the last one on each side, were very close together; those of the right, especially, being directed very strongly upward. The transverse processes in the upper half of the thoracic region were turned far backward so as to make a deep gutter on either side of the spine—additional evidence of the early occurrence of the disease. The sacrum was very long and flat. The flatness, indeed, is probably the cause of the length. There were six sacral vertebræ, of which the first was rather transitional. The coccyx was coössified.

The aorta belongs to the fifth of the above-mentioned types; or, perhaps, might be compared to an S lying on its side, with the ends bent strongly back so as to fit around the prominence of the spine.

The general course of the aorta was as follows: the termination of the arch apparently began to rest on the spine at the middle of the body of the third thoracic vertebra, whence it descended in a long sweep, first to the left for a short distance, and then without sudden change of direction obliquely downward across the vertebral column to the head of the right eighth rib. This may be called the first curve. It then turned very sharply to make a second, a horizontal curve, still resting on the upper half of the bent spine, running forward, across, and backward, with a slight downward tendency, round and back to the left. The beginning of the second curve is close under and almost parallel to the latter part of the first. The third curve began with another sudden change of direction, and ran obliquely downward and forward along the fourth and fifth lumbars to the median line, where it divided into the iliacs opposite the highest point of the promontory. The length of the first curve, measured along the middle of the vessel, beginning at the level of the lower border of the left subclavian, is 12.5 cm.; that of the second, 11 cm.; and that of the third to the bifurcation, 8 cm., making a total of 31.5 cm. This is probably but a little less, some 3 cm., than the average length. The aorta is on the mounted preparation of small diameter; unfortunately it was not measured while fresh, but to the best of my recollection it was notably small. The third curve is of decidedly smaller diameter than the parts above it. There is no tendency to a dilatation above the first bend, nor to a constriction below it. At the second the difference in size is more marked. It would not appear that there was any great danger of a sudden interruption of the circulation in spite of the sharpness of the changes of direction. It seems probable that the aorta continued to grow in length after the beginning of the disease of the spine.

Unsatisfactory as this description may be without clinical observations, it is perhaps worth giving on account of the rarity of the specimen.